Amendments to the Specification

Please amend the specification to read as follows. Applicant submits that no new matter has been introduced to the above-mentioned application. The amendments include matter from the original application and claims (1 and 32).

Please substitute the following paragraphs for the SUMMARY OF THE INVENTION beginning on page 4, line 1 and ending on page 4, line 26:

SUMMARY OF THE INVENTION

Embodiments of an apparatus and methods for mitigation of corrosion in a high pressure and high temperature reaction system that can be used for oxidative waste treatment under supercritical water conditions are described.

In an embodiment of a system and method for oxidative waste treatment, a first fluid may be transported through a first conduit at a first flow rate and at a first temperature. Construction of the first conduit may be such that the first conduit may have an end within the interior of the second conduit, and is in fluid communication with the second conduit. Fluid communication between the first conduit and second conduit may allow the first fluid to be injected into the second fluid. Transportation of the second fluid may occur in a second conduit at a second temperature and a second flow rate. The first fluid may be corrosive in a corrosive temperature range and the corrosive temperature range may exclude the second temperature.

The first and second fluids may be mixed in the second conduit at a mixing length downstream of the end of the first conduit. The second conduit may include a tube or liner having at least an inner surface area made of a corrosion resistant material and extending along the mixing length to inhibit corrosion of the second conduit. As used herein, "mixing length" is the distance necessary for a mixed fluid to reach a steady state temperature.

The first and second temperatures and the first and second flow rates may be selected

such that the mixed fluids downstream of the mixing length are at a temperature that is substantially non-corrosive for the first fluid.

In an embodiment, a high pressure and high temperature reaction system suitable for oxidative waste treatment may include a first and a second conduit adapted to transport a first and a second fluid. The second conduit may be adapted to transport the second fluid at a second temperature and at a second flow rate. Transportation of the first fluid in the first conduit may occur at a first flow rate. The first fluid may be at a first temperature, which is corrosive in a corrosive temperature range, which excludes the second temperature.

The first conduit may have an end within the interior of the second conduit, which allows the first conduit to be in fluid communication with the second conduit. Fluid communication of the first and second conduits may be such that the first fluid and the second fluid can be mixed in the second conduit within a mixing length from the end of the first conduit. As a result of the mixing, the mixed fluids downstream of the mixing length may have a temperature substantially non-corrosive for the first fluid.

The high pressure and high temperature reaction system may have a tube or liner having at least an inner surface area made of a corrosion resistant material. The tube or liner may be part of the second conduit and may extend along the mixing length to inhibit corrosion of the second conduit. The second conduit may be made up of a conventional construction material (e.g., nickel based alloy) upstream and downstream of the tube or liner configured for high pressure and high temperature reaction systems suitable for supercritical water oxidation.

Please replace the paragraph beginning on page 10, line 18 with the following amended paragraph:

By pumping appropriate amounts of quench water through input tube 208, the effluent input through tube 207 will be cooled effectively by the quench water and get mixed with it. The flow rates are such that the total flow (effluent and quench water) will have a temperature of below a certain temperature, e.g. 270°C, depending on concentration of corrosive compounds, after having reached a steady temperature state a certain distance 215 from the end of the input tube 207, said distance being referred to as the mixing length. Accordingly, to avoid any risk of corrosion of the inner walls of tube 203, the length of the liner 205 should be at least of this mixing length, and it should be localized to protect the inner walls of tube 203 within this length. For practical reasons, the liner ~~203~~ 205 may have an offset 217 in the end facing the end of tube 207, i.e. extend beyond (upstream of) said tube end, to avoid any risk of corrosion in that region.